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10/538,081	06/09/2005	Ernst H K Stelzer	3447-101	9229
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EXAMINER				
FINEMAN, LEE A				
ART UNIT		PAPER NUMBER		
2872				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PTO-PAT-Email@rfem.com

Office Action Summary

Application No.

10/538,081

Applicant(s)

STELZER ET AL.

Examiner

LEE FINEMAN

Art Unit

2872

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 July 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 and 25-45 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 and 25-45 is/are rejected.
- 7) ☒ Claim(s) 16-23 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 6/9/05 & 4/24/07 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

This Office Action is in response to an amendment filed 11 July 2008 in which claims 1, 16 and 25 were amended. Claims 1-23 and 25-45 are pending.

Claim Objections

1. Claims 16-23 are objected to because of the following informalities: Claim 16 includes the limitations “each illumination beam path is provided with a focusing arrangement for producing a linear object illumination region which extends in a direction of an illumination axis of the illumination beam path” and “wherein the linear object illumination region is essentially limited to a **direction of the illumination axis**”. It is unclear whether the directions are the same or different. For the purposes of examination the directions will be taken to be the same. The dependent claims inherit the deficiencies of the claims from which they depend. Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 25-27, 29, 32-33, 39-41 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Voie et al., “Orthogonal-plane fluorescence optical sectioning: three-dimensional imaging of macroscopic biological specimens”, JOURNAL OF MICROSCOPY,

vol. 170, Pt. 3, June 1993, pp. 229-236 (henceforth Voie) in view of Cashell et al., US 4,850,779 (henceforth Cashell).

Regarding claims 25 and 29, Voie discloses in fig. 2 a microscope having at least one illumination beam path (along the x-axis) and at least one detection beam path (along the z-axis), characterized in that each illumination beam path is provided with a focusing arrangement (cylindrical lens), including a cylindrical lens (fig. 2), for producing an object illumination region (see fig. 1) which extends in the direction of an illumination axis of the illumination beam path (on the x-axis) and transversely thereto (on the y-axis), a detection direction (on the z-axis) of the at least one detection beam path is approximately orthogonal to the object illumination region (figs. 1 and 2), and a mobile arrangement (specimen holder, see page 232) is provided for producing a relative movement between the two-dimensional object illumination region (see fig. 1) and an object to be studied (see page 232, specimen holder section, especially lines 9-17); and the object is mounted on a holder (specimen holder with rotation shaft), the holder being movable within a sample chamber such that the mobile arrangement can produce a displacement movement of the object within the sample chamber (when there is rotation of the sample by the rotation shaft, the sample is displaced within the sample chamber). Voie discloses the claimed invention except for the displacement movement being rectilinear. Cashell teaches a manipulator for any type of movement of an object (including the claimed rectilinear) within a chamber (see abstract and fig. 1). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the manipulator of Cashell in the microscope of Voie to provide an improved number of degrees of freedom for movement of the object (Cashell, column 1, lines 31-33) for examination of different parts of the object.

Regarding claims 26 and 27, Voie further discloses that the mobile arrangement can produce a rotational movement of the (specimen holder with rotation shaft; see page 232, specimen holder section, especially lines 9-17); and that the mobile arrangement is designed to move the object while the object illumination region is essentially stationary (see page 232, specimen holder section, especially lines 9-17).

Regarding claims 32 and 33, Voie further discloses that a light source (laser) is a lamp or a laser (fig. 2), which provides light of one or more wavelengths (see page 231, Illumination system section and page 232, Illumination optics section) and that scattered light or fluorescent light of one or more wavelengths is used (see page 231, Illumination system section and page 232, Illumination optics section).

Regarding claim 39, Voie further discloses that the at least one detection beam path (along the z-axis) can be adapted so that the detection direction is approximately orthogonal to the object illumination region when the object illumination region is shifted (see page 233, alignment section and fig. 4; the detection beam path remains approximately orthogonal as the object illumination region is moved).

Regarding claims 40 and 41, Voie further discloses the object illumination region is substantially planar-shaped (see fig. 1, when looking perpendicular to the x- and y-axes) and the object illumination region is substantially linearly-shaped (see fig. 1, when looking perpendicular to the y- and z-axes or the x- and z-axes).

Regarding claim 44, Voie further discloses wherein the mobile arrangement provides at least one rotational axis (y-axis direction, see page 232, specimen holder section, especially lines

9-17) being substantially perpendicular to said illumination axis (x-axis) and substantially perpendicular to said detection direction (z-axis).

4. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Voie in view of Cashell as applied to claim 25 above and further in view of Horikawa.

Regarding claim 28, Voie in view of Cashell as applied to claim 25 above disclose the claimed invention except for wherein the mobile arrangement is designed to move the object illumination region while the object is essentially stationary. Horikawa teaches that a system that moves the object and a system that moves the illumination region are art-recognized equivalents in the microscope art (column 1, lines 28-35). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use any of the above equivalent moving/scanning methods in the system of Voie in view of Cashell to effectively image the entire object.

5. Claims 30 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Voie in view of Cashell and Horikawa as applied to claim 29 above and further in view of Lee, US 2002/0163717 A1.

Voie in view of Cashell and Horikawa as applied to claim 29 above disclose the claimed invention except for explicitly stating that the cylindrical lens can be rotated about the illumination axis and/or displaced in the direction of the illumination axis and/or the cylinder axis, and/or can be tilted via the cylinder axis with respect to the illumination axis and the movement of the cylindrical lens is a high-frequency movement. Lee teaches in fig. 6 a scanning

method wherein the cylindrical lens (206) can be rotated about the illumination axis and/or displaced in the direction of the illumination axis and/or the cylinder axis, and/or can be tilted via the cylinder axis with respect to the illumination axis (page 3, sections [0040]-[0042]) and the movement of the cylindrical lens is a high-frequency movement (relative to a slower moving motor system, see section [0042], lines 13-17). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the moving/scanning of the light beam be done by the displacement of the cylindrical lens as taught by Lee to provide a faster, more efficient scanning of the object (Lee, section [0042], lines 15-17).

6. Claims 35-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Voie in view of Cashell as applied to claim 25 above and further in view of Stelzer et al., DE 4326473 A1 (henceforth Stelzer).

Voie in view of Cashell as applied to claim 25 above disclose the claimed invention except for having at least two illumination beam paths with essentially opposite illumination directions are provided for producing at least locally overlapping object illumination regions and the illumination light of the two illumination beam paths interferes at least locally in the direction of the illumination axis in the region of the object illumination region and has a constant, adjustable phase. Stelzer teaches in figs. 1b and 3 a microscope system having at least two illumination beam paths (1) with essentially opposite illumination directions (figs. 1b and 3) are provided for producing at least locally overlapping object illumination regions (fig. 1b) and the illumination light of the two illumination beam paths interferes at least locally in the direction of the illumination axis in the region of the object illumination region and has a

constant, adjustable phase (page 3, paragraphs 4-6 of machine translation). It would have been obvious to one of ordinary skill in the art at the time the invention was made to add a second illumination beam path as taught by Stelzer to the system of Voie in view of Cashell to provide a better dissolution of the image (Stelzer, page 3, paragraphs 4-6 of machine translation).

7. Claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over Voie in view of Cashell as applied to claim 25 above and further in view of Palcic et al., US 4,700,298 (henceforth Palcic)

Regarding claim 38, Voie in view of Cashell as applied to claim 25 above further disclose has a detector (fig. 2 camera, Voie). Voie in view of Cashell as applied to claim 25 above disclose the claimed invention except wherein the detector can be moved laterally with respect to the detection direction of the at least one detection beam path. Palcic teaches that a system that moves the object by a scanning stage and a system that scans by moving the detector laterally are art-recognized equivalents in the microscope art (column 2, lines 22-36). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use any of the above equivalent moving/scanning methods in the system of Voie in view of Cashell to effectively image the entire object.

8. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Voie in view of Cashell as applied to claim 25 above and further in view of Van Eijk et al., US 4,746,800 (henceforth Van Eijk).

Voie in view of Cashell as applied to claim 25 above disclose the claimed invention except for the holder being configured so that the holder can be rotated around an axis corresponding essentially to the gravitational direction. Van Eijk teaches an object holder which can be rotated around an axis corresponding essentially to the gravitational direction (see fig. 5 and at least claim 8, z-axis is in the direction of gravity). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the object holder of Voie in view of Cashell also be able to be rotated around an axis corresponding essentially to the gravitational direction as taught by Van Eijk for the purpose of viewing different aspects of the object.

9. Claims 1-3, 5, 8-10, 15, 42-43 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Voie in view of Van Eijk et al., US 4,746,800 (henceforth Van Eijk).

Voie discloses in fig. 2 a microscope having at least one illumination beam path (along the x-axis) and at least one detection beam path (along the z-axis), characterized in that each illumination beam path is provided with a focusing arrangement (cylindrical lens), including a cylindrical lens (fig. 2), for producing an object illumination region (see fig. 1) which extends in the direction of an illumination axis of the illumination beam path (on the x-axis) and transversely thereto (on the y-axis), a detection direction (on the z-axis) of the at least one detection beam path is approximately orthogonal to the object illumination region (figs. 1 and 2), and a mobile arrangement (specimen holder, see page 232) is provided for producing a relative movement between the two-dimensional object illumination region (see fig. 1) and an object to be studied (see page 232, specimen holder section, especially lines 9-17); and the object is

mounted on a holder (specimen holder with rotation shaft), the holder being movable within a sample chamber such that the mobile arrangement can produce a displacement movement of the object within the sample chamber (when there is rotation of the sample by the rotation shaft, the sample is displaced within the sample chamber); and that the object is to be held by a holder (specimen holder) in a sample chamber (see page 232, specimen holder section) in which it can moved along at least one direction (y-axis, see page 232, specimen holder section). Voie disclose the claimed invention except for the holder being configured so that the holder/mobile arrangement can be rotated around an axis corresponding essentially to the gravitational direction. Van Eijk teaches an object holder which can be rotated around an axis corresponding essentially to the gravitational direction (see fig. 5 and at least claim 8, z-axis is in the direction of gravity). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the object holder of Voie also be able to be rotated around an axis corresponding essentially to the gravitational direction as taught by Van Eijk for the purpose of viewing different aspects of the object.

10. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Voie in view of Van Eijk as applied to claim 1 above and further in view of Horikawa.

Voie in view of Van Eijk as applied to claim 1 above disclose the claimed invention except for wherein the mobile arrangement is designed to move the object illumination region while the object is essentially stationary. Horikawa teaches that a system that moves the object and a system that moves the illumination region are art-recognized equivalents in the microscope art (column 1, lines 28-35). It would have been obvious to one of ordinary skill in the art at the

time the invention was made to use any of the above equivalent moving/scanning methods in the system of Voie in view of Van Eijk to effectively image the entire object.

11. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Voie in view of Van Eijk and Horikawa as applied to claim 5 above and further in view of Lee.

Voie in view of Van Eijk and Horikawa as applied to claim 5 above disclose the claimed invention except for explicitly stating that the cylindrical lens can be rotated about the illumination axis and/or displaced in the direction of the illumination axis and/or the cylinder axis, and/or can be tilted via the cylinder axis with respect to the illumination axis and the movement of the cylindrical lens is a high-frequency movement. Lee teaches in fig. 6 a scanning method wherein the cylindrical lens (206) can be rotated about the illumination axis and/or displaced in the direction of the illumination axis and/or the cylinder axis, and/or can be tilted via the cylinder axis with respect to the illumination axis (page 3, sections [0040]-[0042]) and the movement of the cylindrical lens is a high-frequency movement (relative to a slower moving motor system, see section [0042], lines 13-17). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the moving/scanning of the light beam be done by the displacement of the cylindrical lens as taught by Lee to provide a faster, more efficient scanning of the object (Lee, section [0042], lines 15-17).

12. Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Voie in view of Van Eijk as applied to claim 1 above and further in view of Stelzer.

Voie in view of Van Eijk as applied to claim 1 above disclose the claimed invention except for having at least two illumination beam paths with essentially opposite illumination directions are provided for producing at least locally overlapping object illumination regions and the illumination light of the two illumination beam paths interferes at least locally in the direction of the illumination axis in the region of the object illumination region and has a constant, adjustable phase. Stelzer teaches in figs. 1b and 3 a microscope system having at least two illumination beam paths (1) with essentially opposite illumination directions (figs. 1b and 3) are provided for producing at least locally overlapping object illumination regions (fig. 1b) and the illumination light of the two illumination beam paths interferes at least locally in the direction of the illumination axis in the region of the object illumination region and has a constant, adjustable phase (page 3, paragraphs 4-6 of machine translation). It would have been obvious to one of ordinary skill in the art at the time the invention was made to add a second illumination beam path as taught by Stelzer to the system of Voie in view of Van Eijk to provide a better dissolution of the image (Stelzer, page 3, paragraphs 4-6 of machine translation).

13. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Voie in view of Van Eijk as applied to claim 1 above and further in view of Palcic.

Regarding claim 14, Voie further disclose has a detector (fig. 2 camera). Voie in view of Van Eijk as applied to claim 1 above disclose the claimed invention except wherein the detector can be moved laterally with respect to the detection direction of the at least one detection beam path. Palcic teaches that a system that moves the object by a scanning stage and a system that scans by moving the detector laterally are art-recognized equivalents in the microscope art

(column 2, lines 22-36). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use any of the above equivalent moving/scanning methods in the system of Voie in view of Van Eijk to effectively image the entire object.

Allowable Subject Matter

14. Claims 16-23 would be allowable if rewritten or amended to overcome the objection set forth in this Office action.

15. The following is a statement of reasons for the indication of allowable subject matter:

Claims 16-23 are have allowable subject matter over the prior art for at least the reason that the prior art fails to teach and/or suggest “wherein the linear object illumination region is essentially limited to a direction the illumination axis” as set forth in the claimed combination.

Walton et al., US 6,294,327 B1 discloses in fig. 6 a microscope having at least one illumination beam path (from the diffuse scattering source) and at least one detection beam path (to the CCD array), characterized in that each illumination beam path is provided with a focusing arrangement (cylindrical lens), including a cylindrical lens (fig. 6), for producing a linear object illumination region (column 6, lines 62-63) which extends in the direction of an illumination axis of the illumination beam path (fig. 6), a detection direction (fig. 6) of the at least one detection beam path is approximately orthogonal to the object linear illumination region (fig. 6), and a mobile arrangement (translational stage) is provided for producing a relative movement between the object illumination region and an object to be studied (column 7, lines 16-17), but does not

have wherein the linear object illumination region is essentially limited to the direction of illumination axis as claimed.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Response to Arguments

16. Applicant's arguments, see page 9, paragraph 4-page 10, line 2, filed 11 July 2008, with respect to claims 16-23 have been fully considered and are persuasive.

17. Applicant's arguments with respect to claims 25-41 and 44 have been considered but are moot in view of the new ground(s) of rejection.

18. Applicant's arguments filed 11 July 2008 with respect to claims 1-15, 42-43 and 45 have been fully considered but they are not persuasive.

Applicant argues in the paragraph bridging pages 11 and 12 of the remarks that Van Eijk is nonanalogous art and more specifically that microscopy and lithography are not the same field of endeavor. Assuming in arguendo that this is the case, Van Eijk is also reasonably pertinent to the particular problem with which the applicant was concerned which is moving an object along different rotational axes. It has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which

the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992).

Further, in response to applicant's argument that optics are different between Voie and van Eijk, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

Conclusion

19. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LEE FINEMAN whose telephone number is (571)272-2313. The examiner can normally be reached on Monday - Friday 8:00 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephone B. Allen can be reached on (571) 272-2434. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Lee Fineman/
Examiner, Art Unit 2872
27 October 2008